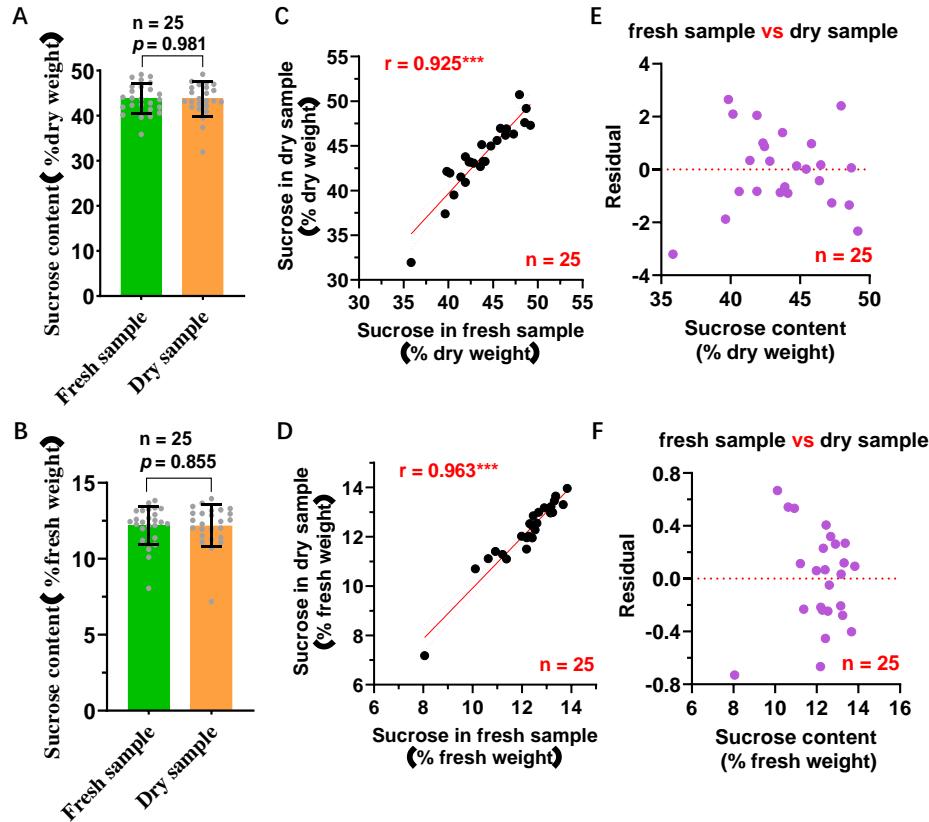


**Annex 1** Waveform used in PAD for HPAEC detecting

| <b>Waveform Time/s</b> | <b>Potential/v</b> | <b>Ramp</b> |
|------------------------|--------------------|-------------|
| <b>0.00</b>            | 0.1                |             |
| <b>0.20</b>            | 0.1                | begin       |
| <b>0.40</b>            | 0.1                | end         |
| <b>0.41~0.42</b>       | ~2.0               |             |
| <b>0.43</b>            | 0.6                |             |
| <b>0.44~0.5</b>        | ~0.1               |             |



**Annex 2 The comparison of sucrose content in fresh and dried samples.** **A-B:** sucrose content in fresh and dried sugarcane samples; **C-D:** correlation analysis of sucrose content between fresh and dried sugarcane samples; **E-F:** residuals of sucrose content between fresh and dried sugarcane samples. \*\*\* indicated the significant correlation at  $p < 0.001$  level.

**Annex 3** Statistics for equations generated for prediction of biomass components in sugarcane stalks.

|                             | Rank | N   | SCM    | Calibration                                |  |  |  | Mean  | SD   | RMSEC | $R^2$ | Cross validation |            |      | External validation |       |            |  |  |  |
|-----------------------------|------|-----|--------|--|--|--|--|-------|------|-------|-------|------------------|------------|------|---------------------|-------|------------|--|--|--|
|                             |      |     |        | Spectrum range (cm <sup>-1</sup> )         |  |  |  |       |      |       |       | RMSECV           | $R^2_{cv}$ | RPD  | N                   | RMSEP | $R^2_{ev}$ |  |  |  |
| <b>Dry weight (Offline)</b> |      |     |        |  |  |  |  |       |      |       |       |                  |            |      |                     |       |            |  |  |  |
| Sugars (% dry weigh)        |      |     |        |  |  |  |  |       |      |       |       |                  |            |      |                     |       |            |  |  |  |
| Glucose                     | 16   | 415 | FD     | 4104~7251.4,8825.1~9612                    |  |  |  | 0.90  | 0.61 | 0.19  | 0.91  | 0.24             | 0.84       | 2.52 | 103                 | 0.23  | 0.92       |  |  |  |
| Fructose                    | 11   | 379 | FD+SNV | 4104~10398.8                               |  |  |  | 1.66  | 0.69 | 0.25  | 0.87  | 0.31             | 0.79       | 2.20 | 100                 | 0.33  | 0.87       |  |  |  |
| Reducing sugar              | 12   | 399 | FD+SNV | 4104~7251.4,8825.1~9612,10398.8~11185.7    |  |  |  | 2.65  | 1.34 | 0.42  | 0.91  | 0.51             | 0.86       | 2.64 | 106                 | 0.61  | 0.89       |  |  |  |
| Sucrose                     | 18   | 396 | FD+SNV | 4104~7251.4,8038.3~10398.8                 |  |  |  | 49.25 | 5.13 | 1.59  | 0.91  | 2.39             | 0.78       | 2.14 | 101                 | 1.87  | 0.89       |  |  |  |
| Total sugar                 | 6    | 367 | FD     | 4890.8~5677.7,6464.5~7251.4,8038.3~10398.8 |  |  |  | 51.82 | 5.20 | 1.99  | 0.86  | 2.11             | 0.83       | 2.46 | 102                 | 1.91  | 0.88       |  |  |  |
| Residues                    | 10   | 374 | SNV    | 4242.8~5276.6,5793.4~7344,7860.8~8377.7    |  |  |  | 48.04 | 5.18 | 1.85  | 0.88  | 2.02             | 0.85       | 2.57 | 100                 | 1.81  | 0.89       |  |  |  |
| Ratio                       |      |     |        |  |  |  |  |       |      |       |       |                  |            |      |                     |       |            |  |  |  |
| Sug/Res                     | 13   | 399 | FD     | 3996~11988                                 |  |  |  | 1.09  | 0.21 | 0.08  | 0.86  | 0.10             | 0.75       | 2.02 | 104                 | 0.09  | 0.82       |  |  |  |
| Suc/Total                   | 14   | 433 | FD     | 4242.8~7860.8,8886.8~9403.7                |  |  |  | 0.95  | 0.03 | 0.01  | 0.87  | 0.01             | 0.81       | 2.27 | 110                 | 0.01  | 0.89       |  |  |  |
| Fru/Glc                     | 13   | 388 | SNV    | 4759.7~5276.6,5793.4~9411.4                |  |  |  | 2.00  | 0.57 | 0.22  | 0.85  | 0.30             | 0.72       | 1.90 | 96                  | 0.23  | 0.81       |  |  |  |
| <b>Dry weight(Online)</b>   |      |     |        |  |  |  |  |       |      |       |       |                  |            |      |                     |       |            |  |  |  |
| Sugars                      |      |     |        |  |  |  |  |       |      |       |       |                  |            |      |                     |       |            |  |  |  |
| Glucose                     | 16   | 290 | FD     | 4890.8~11185.7                             |  |  |  | 0.89  | 0.49 | 0.19  | 0.86  | 0.25             | 0.74       | 1.98 | 117                 | 0.21  | 0.81       |  |  |  |
| Fructose                    | 20   | 272 | FD     | 4104~8038.3,8825.1~11972.5                 |  |  |  | 1.60  | 0.53 | 0.23  | 0.83  | 0.30             | 0.68       | 1.76 | 104                 | 0.27  | 0.79       |  |  |  |
| Reducing sugar              | 31   | 285 | FD     | 4242.8~9411.4                              |  |  |  | 2.44  | 0.97 | 0.33  | 0.90  | 0.52             | 0.71       | 1.86 | 116                 | 0.46  | 0.84       |  |  |  |
| Sucrose                     | 10   | 382 | FD+SNV | 5677.7~10398.8,11185.7~11972.5             |  |  |  | 49.59 | 4.83 | 1.86  | 0.86  | 2.03             | 0.82       | 2.38 | 111                 | 2.35  | 0.82       |  |  |  |
| Total sugar                 | 8    | 396 | FD+SNV | 5677.7~7251.4,8038.3~11972.5               |  |  |  | 52.31 | 4.84 | 1.95  | 0.84  | 2.09             | 0.81       | 2.31 | 112                 | 2.36  | 0.80       |  |  |  |
| Residues                    | 13   | 390 | FD     | 4752~6834.8,7853.1~9411.4                  |  |  |  | 47.40 | 4.88 | 1.75  | 0.88  | 1.90             | 0.85       | 2.56 | 108                 | 1.99  | 0.86       |  |  |  |
| Ratio                       |      |     |        |  |  |  |  |       |      |       |       |                  |            |      |                     |       |            |  |  |  |
| Sug/Res                     | 22   | 332 | FD     | 4104~11972.5                               |  |  |  | 1.11  | 0.20 | 0.06  | 0.91  | 0.08             | 0.86       | 2.63 | 131                 | 0.07  | 0.88       |  |  |  |
| Suc/Total                   | 19   | 280 | FD     | 4752~9411.4                                |  |  |  | 0.95  | 0.02 | 0.01  | 0.88  | 0.01             | 0.77       | 2.07 | 110                 | 0.01  | 0.81       |  |  |  |
| Fru/Glc                     | 27   | 282 | FD     | 4242.8~7344,7853.1~9411.4                  |  |  |  | 1.92  | 0.53 | 0.18  | 0.90  | 0.26             | 0.77       | 2.09 | 114                 | 0.25  | 0.83       |  |  |  |
| <b>Fresh weight(Online)</b> |      |     |        |  |  |  |  |       |      |       |       |                  |            |      |                     |       |            |  |  |  |
| Moisture                    | 22   | 456 | FD+SNV | 4104~11972.5                               |  |  |  | 73.24 | 2.36 | 0.45  | 0.97  | 0.55             | 0.95       | 4.30 | 114                 | 0.63  | 0.96       |  |  |  |
| Sugars                      |      |     |        |  |  |  |  |       |      |       |       |                  |            |      |                     |       |            |  |  |  |
| Glucose                     | 31   | 295 | FD     | 4104~11972.5                               |  |  |  | 0.25  | 0.16 | 0.04  | 0.93  | 0.07             | 0.78       | 2.13 | 117                 | 0.05  | 0.87       |  |  |  |
| Fructose                    | 18   | 289 | FD+SNV | 4104~11972.5                               |  |  |  | 0.45  | 0.18 | 0.07  | 0.87  | 0.08             | 0.81       | 2.31 | 116                 | 0.08  | 0.82       |  |  |  |
| Reducing sugar              | 24   | 287 | FD     | 4242.8~9411.4                              |  |  |  | 0.67  | 0.28 | 0.10  | 0.89  | 0.13             | 0.79       | 2.19 | 116                 | 0.12  | 0.81       |  |  |  |
| Sucrose                     | 22   | 413 | FD+MSC | 4104~11972.5                               |  |  |  | 13.32 | 1.93 | 0.54  | 0.93  | 0.67             | 0.88       | 2.89 | 110                 | 0.63  | 0.92       |  |  |  |
| Total sugar                 | 16   | 446 | FD     | 5276.6~7344,7853.1~8377.7                  |  |  |  | 14.05 | 2.00 | 0.61  | 0.91  | 0.68             | 0.89       | 2.96 | 112                 | 0.62  | 0.93       |  |  |  |
| Residues                    | 11   | 420 | FD+SNV | 5276.6~9411.4                              |  |  |  | 12.60 | 1.47 | 0.58  | 0.85  | 0.62             | 0.82       | 2.38 | 112                 | 0.63  | 0.88       |  |  |  |

N, sample number; SCM, scatter correction methods; SD, standard deviation of reference value; RMSEC, root mean square error of calibration;  $R^2$ , determination coefficient; RMSECV, root mean square error of cross validation;  $R^2_{cv}$ , determination coefficient of cross validation; RMSEP, root mean square error of external validation;  $R^2_{ev}$ , determination coefficient of external validation; RPD, ratio performance deviation; SNV, standard normal variate; MSC, standard multiple scatter; FD, first derivative; FD+SNV, a combination of FD and SNV; FD+MSC, a combination of FD and MSC.